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INFORMATION ON SOVIET BLOC INTERNATIONAL GEOPHYSICAL COOPERATION - 1960

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# INFORMATION ON INTERNATIONAL GEOPHYSICAL COOPERATION -SOVIET-BLOC ACTIVITIES

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#### I. GENERAL

# "Nauka i Zhizn'" Reviews Soviet Accomplishments During the IGY

The Soviet popular science journal Nauka i Zhizn' has recently carried a several thousand word article devoted primarily to the accomplishments of the USSR during the IGY. However, considerable effort is made to accent the collective efforts of the other IGY participants.

This article touches briefly on each of the various fields of geophysical research which constituted part of the IGY program. An example of unusual accomplishment is cited for each such field.

In general, an article of this type has appeared in virtually every Soviet periodical of a popular or semi-popular nature. A screening of these articles has revealed nothing not earlier reported elsewhere in detail, but they are published in response to a considerable interest in the IGY on the part of the Soviet reader. ("Under the Flags of 66 Countries," by V. A. Troitskaya, Nauka i Zhizn', No. 5, 1960, pp. 11-16)

# Ukrainian Article Reviews Nature of the Earth's Crust and Internal Structure

"Soviet scientists conducting research in accordance with the program of the International Geophysical Year and the International Geophysical Cooperation Program of 1959 have collected new data concerning the deep interior of the Earth. It appears that the Earth's crust — the outermost shell of our planet — consists of sedimentary rocks, granite and basalt. On the continents its thickness is as great as 35 kilometers, but under the oceans this layer is less than 5 kilometers thick. Some detailed studies have been made of the so-called transitional regions between the bed of the ocean and the continental platforms. The collected data have made it possible to develop our ideas concerning the laws of development of the Earth's crust."

"Under the crust, state these Soviet scientists, to depths of approximately three thousand kilometers there prevail tremendous pressures, high temperatures and (possibly) the motion of charged particles, giving rise to a layer in which all matter is transformed into a nonsolid state. This layer extends down to five thousand kilometers. Electrical currents arise here which give rise to the magnetic field of our planet. Below this nonsolid layer there is a recurrence of solid rocks. Thus, according to this theory, the solid core of the Earth is surrounded by a layer consisting of matter in a nonsolid state. Astronomical observations confirm this assumption. Careful consideration of the character of the Earth's structure, declare the scientists, shows that it resembles that of an egg — a hard shell, then a nonsolid medium, and then a rather solid yolk."

**CPYRGHT** 

**CPYRGHT** 

**CPYRGHT** 

"Further investigation and direct penetration into the depths of the Earth will enable us to determine precisely the character of the interior of our planet." ("What is the Nature of the Interior of the Earth?", Unsigned article, Znannya to Pratsya, No. 9, 1960, p. 17)

#### II. MLTEOROLOGY

#### Pictures of Soviet Research Ship

The Hungarian periodical Nepszeru Technika (Popular Technology) carried a brief article and several pictures on the Soviet meteorological research ship Yu. M. Shokal'skiy in its October issue. The Shokal'skiy is shown riding at anchor in one picture. Three other pictures show research rockets being readied for firing. ("Floating Meteorological Institute"; Budapest, Nepszeru Technika, October 1960, p. 303 and front cover)

#### III. UPPER ATMOSPHERE

#### Russians Publish Significant Lunar Study

The State Publishing House of Physical-Mathematical Literature has recently released an important 384-page book entitled "The Moon" ("Luna"). The volume in reality represents the collective efforts of eleven authors under the general editorial direction of A. V. Markov, Doctor of Physical-Mathematical Sciences. There were 4,500 copies printed. The book contains 110 significant graphs, diagrams and clear photographs.

The contents of the book are best summarized by translation of the table of contents (the names given are those of the particular authors of the sections):

Foreword

Chapter I. Motion, rotation and shape of the Moon (A. A. Yakovkin). Some data about the Moon, its motion and shape; Outline of the development of the theory of lunar motion; Determination of lunar mass; Optical libration of the Moon; Observational determination of the coordinates of details on the Moon's surface; Corrections for the relief of the Moon's edge; Physical libration of the Moon; The shape of the Moon; Determination of the heights of lunar mountains; Processing of observations of lunar occultations of stars; Use of lunar observations for geodetic purposes; Possible use of lunar observations for interplanetary navigation; Bibliography (42 items).

Chapter II. Lunar cartography and selenographic coordinates (Sh. T. Khabibullin). Selenographic coordinates; Cartographic grid for lunar maps; Physical coordinates of the Moon; Methods of determining selenographic coordinates; On the system of arrangement of details on the Moon's surface; Maps and photographic atlases of the Moon; Possible method for determining position on the Moon; Bibliography (7 items).

Chapter III. Description of the lunar surface (A. V. Markov). Bibliography (5 items).

Chapter IV. The problem of a lunar atmosphere (N. N. Sytinskaya). Introduction; Theoretical considerations; Observations of star occultations as a means of discovering an atmosphere by the phenomenon of refraction; Attempts to discover a lunar atmosphere by spectroscopic methods; Estimation of the density of a lunar atmosphere from the brightness and polarization of scattered light; The application of radioastronomical observations to investigation of a lunar atmosphere.

Chapter V. Physical properties of the Moon's surface.
Albedo and color of the Moon's surface (N. P. Barabashov), Bibliography (33 items); Polarization properties of the Moon's surface (A.
V. Markov), Bibliography (17 items); Temperature of the Moon's surface (M. S. Zel'tser), Bibliography (25 items).

Chapter VI. Investigation of the Moon by Radio Methods (N. L. Kaydanov-skiy). Introduction; Radar observations of the Moon, Bibliography (17 items); Radioastronomical investigation of the Moon, Bibliography (24 items).

Chapter VII. Characteristic features of the Moon's relief. Principal problems of genesis and sequence of development of lunar formations (A. V. Khabakov).

Some general peculiarities of lunar shape; On the scale and typical categories of lunar relief; Criteria determining the sequence of development of forms of lunar relief; Principal periods in the historical development of the Moon's surface; Bibliography (45 items).

Chapter VIII. Role of external cosmic factors in the evolution of the Moon (K. P. Stanyukovich and V. A. Bronshten). Structural complexities of craters; Arrangement of craters on the Moon's surface; Formation of seas and crevasses; Theory of explosive phenomena on the collision of meteorites on the Moon; Formation of light-colored rays of lunar craters; Collision of meteorites and asteroids; Bibliography (22 items).

Chapter IX. Nature of the Moon's Surface (V. V. Sharonov). Method of research; Summary of source material; Hypothesis of a recent rock surface of magmatic rocks; Hypothesis of a change in the coloring of minerals under the influence of various kinds of radiation; Hypothesis of a weathered crust and sedimentary rocks; Hypothesis of a dust cover arising as a result of rock erosion; Hypothesis of a cover made up of meteoric material; Meteor-slag theory; Bibliography (74 items).

Conclusion (A. V. Markov).

Appendix I is of exceptional value. It gives a listing of hundreds of Latin and English lunar place names with their Russian equivalents.

Appendix II is of even greater importance. It consists of two large folding maps of the Moon. On the first map there are 400 physical features which are cross-referenced to the listing in Appendix I. The second map, compiled by A. V. Khabakov, is the famed geological map of the Moon earlier reported in <u>Information on International Geophysical Cooperation</u>. It is printed in three colors.

("Luna," edited by A. V. Markov, State Publishing House of Physical-Mathematical Literature, Moscow, 1960, 384 pages)

# Academician Fedenkov Writed in "Pravda" on the Structure of the Solar System

It is typical of the current Soviet press that the most outstanding Soviet specialists are often the authors of scientific articles written at the level of the general reader. These articles, such as the one under review, are often models of good and authoritative scientific writing, but are lacking in depth.

Academician Fesenkov, writing in a recent issue of <u>Pravda</u>, discusses the planets of our solar system, their satellites, the asteroids, comets, and certain aspects of interplanetary space. He then proceeds to a somewhat more detailed discussion of Venus, Mars and Jupiter. His treatment of these subjects in each case is at a quite superficial level. ("Unraveling the Secrets of the Planets...," Acad. V. Fesenkov, Pravda, 23 October 1960, p. 6)

#### Report on Inert Gases in Two Iron Meteorites

L. K. Levskiy of the Pre-Cambrian Geological Laboratory of the Academy of Sciences of the USSR is the author of a single-page communication recently appearing in the Soviet specialized journal Geokhimiya. The author provides data on the content and isotopic composition of argon and helium in the Chebankol and Chinge iron meteorites. A table is given in which the results of measurements are cited, together with data for two other meteorites (Sikhote-Alin and Toluka).

The content and isotopic content of argon and helium in the Chebankol meteorite is typical for iron meteorites. The Chinge meteorite differs from the others, especially in the He<sup>3</sup>/A<sup>38</sup> ratio. This value is usually about 20, but in the case of the Chinge meteorite it is 2.7.

The author offers some speculation as to the possible explanation for this phenomenon. ("Inert Gases in Two Iron Meteorites," by L. K. Levskiy, Geokhimiya. No. 2, 1960, p. 183)

#### IV. GR'VIMETRY

# Report on the Sixth Interdepartmental Conference on Gravimetry

The Sixth Interdepartmental Conference on Gravimetry was held in Moscow from 10-14 May 1960. It was sponsored by the Section on Geodesy of the Committee on Geodesy and Geophysics of the Academy of Sciences of the USSR (AN SSSR) and the Aerogravimetric Laboratory of the Institute of Physics of the Earth (IFZ) of the Academy of Sciences of the USSR. Participating in this conference were 216 representatives of 64 operational, scientific-research, experimental-design and educational institutions and organizations of the Academy of Sciences of the USSR, the Siberian Division of the AN SSR, the Academies of Science of the Ukrainian, Georgian, Lithuanian and Azerbaydzhan Soviet Socialist Republics, the Ministry of Advanced and Intermediate Special Education of the USSR, the Ministry of Geology and Conservation of Mineral Resources of the USSR, the Committee on Standards, Measures and Measuring Instruments of the Council of Ministers of the USSR, the State Committee of the Council of Ministers of the USSR on Automation and Machine Construction, and representatives of those factories c' the Moscow and Leningrad Councils of National Economy which produce gravimetric apparatus.

The work of the conference was accomplished at plenary sessions and sectional meetings of four groups: "Determination of the Force of Gravity on Land," "Geodetic Gravimetry," "Earth Tides,' and "Utilization of Gravimetric Data for the Study of the General Structure of the Earth's Crust." More than 70 reports and communications were presented and more than 100 members of the conference participated in the discussions.

The first report delivered at the conference was that of I. D. Thongolovich (Institute of Theoretical Astronomy of the Academy of Sciences of the USSR) on the subject "Experience in the Determination of Several Parameters of the Earth's G.avitational Field from the Results of Observations of the Second and Third Artificial Earth Satellites." The speaker observed that several parameters of the Earth's field are already being determined by satellite observations with an accuracy that is dozens of times more precise than terrestrial surveys. He mentioned the criterion of effectiveness of the application of the new method of study of the Earth's outer gravitational belt and compared the results with published data from other research.

3. M. Yanovskiy (All-Union Scientific Research Institute of Metrology -- VNIM), in a report on the subject "Determination of the Absolute Value of the Force of Gravity for the VNIM Station in Leningrad," stated that in the period 1957-1959 the VNIM conducted control experiments for the determination of the absolute value of g. The Institute employed the method of the free falling of a rod and the

method using the beats of a reversible pendulum. Two quartz pendulums were used; they were of an equal mass, but of a different length. The pendulum supports were made of quartz. The results of additional experiments confirmed the earlier (1956) derived value of g for the VNIIM station.

A large part of the work of the conference was devoted to problems relating to the development of apparatus and observation methods. The following reports were devoted to these subjects: M. Ye. Kheyfets -- "A Highly Precise Pendulum Instrument of the Central Scientific Research Institute of Geodesy, Aerial Survey and Cartography (TSNIIGAiK)"; V. A. Tulin -- "Portable Quartz Clocks"; L. A. Gerenburg -- Problems in Recording Time During Pendulum Measurements"; G. M. Mininzon, T. M. Ayrapetyan, M. S. Davydov -- "The GVP-1 Portable Gravimeter-Altimeter"; K. Ye. Veselov -- "Development of a Highly Precise Gravimeter"; Yu. D. Bulanzhe (IFZ AN SSSR) -- "Principal Approaches to Work in the Field of Determination of Acceleration of the Force of Gravity at Sea"; V. A. Romanyuk -- "Theory of Determination of the Acceleration of the Force of Gravity at Sea by Gravimeters"; A. M. Lozinskaya -- "Marine Stringed Gravimeters." and others.

Ten reports were presented and discussed at sessions of the section on "Geodetic Gravimetry." A report by M. S. Molodenskiy (TaNIIGAIK) was devoted to an analysis of errors made by several authors in papers which have already been published or have been presented for publication. The speaker pointed out that the analytic continuation of anomalies within attracting masses (A. K. Malovichko, Perm State University) cannot serve as the basis for development of a theory of the figure of the This is because simple examples show that for the true Earth analytic continuation of anomalies is not always possible. S. V. Gromov (Leningrad State University) uses expansion by degrees of the ratio of the height of the physical surface above the reading surface to the Earth's radius, limiting himself to the first terms of such expensions. For the real Earth the series may prove to be divergent, but even in the case of convergence of the series an error is intolerable because it leads to disregard of the tilt of the physical surface of the Earth. The speaker pointed out that it is impossible to approve of the attempt made by K, Arnold (German Democratic Republic) to represent the individual terms of integral-differential equations in the form of expansions by degree of the ratios of the difference in heights of variable and investigated points to the distance between these points. values may be large near the investigated point. For deflection of the vertical the derivation of the Arnold formula is based on an integral-differential equation and also based on the assumption of parallelism at the investigated point of the Listing geoid and the physical surface. But in integral or integral-differential equations all points are equally correct, therefore the Arnold proposal in essence amounts to parallelism of the Earth's surface and the Listing good at all points.

L. A. Govorova (Tantigaik), in a report entitled "On Errors in Interpolation of Anomalies of the Force of Gravity and on the Accuracy of Determination of Gravimetric Deflections of the Vertical," reported that the formula derived theoretically by M. S. Molodenskiy,  $\delta v = 0$ ".15 &g ( $\delta v = 0$ ") in derivation of the gravimetric deflection of the vertical,  $\delta g = 0$ " the error in interpolation of the force of gravity in mgl) is confirmed by an investigation of data from detailed gravimetric surveys. Surveys were made in three regions which differ in relief and which had gravitational fields with anomalies of differing magnitude. Full errors in interpolation were derived for distances between gravimetric stations which varied from 0 to 20 km.

In a report by B. A. Bryusov (Moscow State University) on the subject "On Errors in Representation and Interpolation of Gravitational Anomalies," he proposed a new formula for the mathematical expression of errors and provided computations which confirmed the supposition of an exponential law of change in errors in the function of area.

There were also a series of reports at this conference which were devoted to work in Antarctica: S. N. Shcheglov -- "On the Preliminary Results of Geodetic and Gravimetric Work in Antarctica"; Yu. N. Avsyuk -- "The Structure of the Earth's Crust in Antarctica, Based on Seismic and Gravitational Data"; S. A. Ushakov -- "The Structure of the Earth's Crust in Antarctica, Based on Gravimetric Data," and others.

P. S. Zakatov (Moscow Institute of Geodetic, Aerial Survey and Cartographic Engineers) delivered a paper at the final plenary session. In his report "On the Training and Utilization of Gravimetric Specialists," he pointed out that the constantly increasing importance of gravimetry in the national economy now demands particular attention to the determination of the number of gravimetric specialists who will be needed in the future and definition of the character of their training at the various technical schools in the country.

The conference concluded its work by the adoption of a resolution in which the following specific recommendations were made:

- 1. Speed up the development of a pendulum instrument for the measurement of the force of gravity with an accuracy of + 0.1-0.2 mgl and gravimeters of the geodetic type for measurements in the range of 3.0-3.5 gal with an accuracy of no less than + 0.1-0.2 mgl. Increase the quality of manufacture of the gravimeters being produced; speed up the standard production of new models of quartz astaticized gravimeters and gravimeter-altimeters. Adopt the method of laboratory calibration of gravimeters as developed at the Institute of Physics of the Earth of the USSR in the actual work of all operational organizations.
- 2. Continue work on the improvement of pendulum instruments and gravimeters for observations in areas of shallow water and in interior lakes, in coastal regions and in areas distant from initial gravimetric points on shore.

- 3. In the field of theoretical research on geodetic gravimetry attention should be concentrated on the following: the development of effective methods for solution of integral equations relative to the perturbing potential or the density of a simple layer replacing the attraction of the Earth's anomalous masses; the development of methods for determination of the Stokes constant; the development of methods for interpolation of anomalies of the force of gravity in mountainous regions and where there are great distances between gravimetric points.
- 4. For the solution of geodetic problems wider use should be made of data relative to the Earth's gravitational field: use observations of the motion of artificial earth satellites, systematically make highly precise gravimetric determinations in tectonically active regions and at points of repeated leveling for the purpose of gaining a better understanding of the movements of the Earth's crust and secular changes of the gravity potential.

  ("News Events," unsigned article, Geodeziya i Kartografiya, No. 8, August 1960, pp. 72-75)

#### Soviet Author Explores Theory of the Gravitational Field of a Regulemized Earth

I. F. Monin of the L'vov Polytechnic Institute is the author of a recent 5-page article which studies two specific cases relating to the gravitational field of a regularized Earth. Monin presents a discussion of a number of applicable formulas, including ones which he himself has derived. ("On the Theory of the Gravitational Field of a Ragularized Earth," by I. F. Monin, Izvestiya Vysshikh Uchebnykh Zavedeniy, Geodeziya i Aerofotos"yenka, Issue 3, 1900, pp. 57-61)

# Determination of a Chravity Value at Leningrod

Between 1947 and 1960 the All-Union Scientific Research Institute of Metrology im. D. I. Mendeleyev (VNIIM) has carried on work associated with the determination of the absolute value of the acceleration of the force of gravity by three independent methods: reversible pendulums, the joint falling of bodies, and the free falling of a quartz rod.

The work was essentially completed in 1956. Its results were discussed at the Eleventh General Assembly of the International Union of Geodesy and Geophysics (Toronto, September 1957).

In the period 1957-1959 two new values for g were determined:
(a) by two quartz reversible pendulums (of equal mass, but different weight) and by the method of the free falling of a rod.

In the 1956-1959 period a total of 245 determinations of g were made, as shown in the tabulation below:

Method of determination	Number of determinations	Moun value of g, on/ose2	Mean square error in re-	
Five quartz reversible pendulums of equal mass,	207	981,9188	0.0004	
out of different length Joint fulling of bodies Free falling of a quartz rod	21 17	981.921 <i>5</i> 981.9229	0.0016 0.0013	

On this basis the VNIIM adopted a value of  $y = 981.919 \pm 0.003$  cm/sec<sup>2</sup>.

The coordinates of the VNIIM station (Leningrad) are: latitude 59°55'06"; longitude + 2.7" to the west of Pulkovo. Height above sea level, 3.5 m. ("Determination of an Absolute Value for the Acceleration of the Force of Gravity of the VNIIM Station," by K. N. Yegorov and A. I. Martsinyak, Izmeritel'naya Tekhnika, No. 8, 1960, pp. 10-11)

#### V. OCEANOGRAPHY

#### Report on TOY Marine Geological Research in the Atlantic Ocean

Recent Soviet work in the field of marine geology in the Atlantic Ocean has been conducted in accordance with the program of the IOY. In 1957-1959, about the oceanographic research vessels "M. Lomonosov," "Ekvetor" and "Sedov," the bottom was explored by scho-sounding methods and a study was made of suspended matter in the osean. All of the collected material is being processed and expeditionary work is continuing.

During the TOY period the "Lomonosov" worked primarily in the northeastern part of the Atlantic -- from Iceland to the latitude of Gibralter and from the British Isles and the Toerian Perinsula to New-foundland. Figure 1 is a full-page map showing the locations of all necanographic stations for the research vousel "Lamonosov." The fifth voyage of the "Lomonosov" was essentially devoted to a meridional cross section along 300 W. from Greenland to the latitude of Rio de Jamelro. Figure 2 shows the oceanographic stations for the "Lomonosov" and "Sedov" to the south of the latitude of Lisbon.

The expedition of the Morine Hydrophysical Institute of the Academy of Sciences on the "Lomonosov" resulted in the discovery of a number of new underwater volumess which rise I to E kn clove the beam floor. Those features have been assigned runes.

The article includes several paragraphs detailing specific information on the results of bottom sampling in several selected areas of the Atlantic. ("Work on Marine Goology in the Atlantic Ocean," by M. V. Klanove, Tavestiya Akademii Nord: SSSR, Cariya Corlogicheshoya, 1960, No. 10. pp. 77-31)

VI. SEISMOLOGY

# Soviet Far East Tsunami Warning Service Has Proven Its Effectiveness

CPYRGHT

A special network of stations has been organized on the Kurile Tslands, Sakhalin and on Kamehatka. These stations possess seismic apparatus to determine and record the location and intensity of seismic disturbances at the bottom of the sea. This information is swiftly communicated to coastal settlements, ports and ships at sea in order that they may escape the savage effects of seismically caused tidal waves. This warning system has already proven its effectiveness in saving lives when a recent tsunami was approaching the Kuriles. Mydroacoustic methods make it possible to give a 20 to 30 minute warning of the approach of a tsunami. This is because sound waves are propagated through the water at a much greater velocity than that with which the tidal wave is moving toward the coast. ("Tsunami," unsigned article, Znannya ta Pratsya, No. 9, 1960, p. 8)

#### VII. ARCTIC AND ANTARCTIC

#### The "SP-3" Continues to Deitt in Anotic Besin

The scientific drift station "Severney Polyme-8" has now traveled

about 4,000 km in the Arotic Ocean in the last 330 days.

The whief of the station, Nikolay Ivanovich Elinov, reports that the staff is made up of 18 young polar specialists. In the last one and one-half years the staff has collected much valuable data on ocean-ography, moteorology, aerology and geophysics.

A violent snow storm has now been in progress for several days, with winds attaining 70 to 80 km per hour, but scientific observations are proceeding as usual. ("On a Drifting Floo," unsigned article,

Pravaa, 20 October 1960, p. 4)

# New World Record Low Temperature Recorded at Vontok

The station Vostok, at the South Cosmagnetic Pole, has now been in operation for three years. It is situated 1,410 km to the south of the Mirnyy observatory at an elevation of approximately 3,500 m above see level.

On 25 August 1954 the themnoweter recorded 57.4 degrees below zero (Caleian), the lowest temperature ever recorded on Earth. It now appears that the most intense cold coincides with the end of the polar night and the reappearance of the Sun. In 1959 a low of 45.70 was recorded on 23-24 August. In 1960 the Sun appearance at Vestok on 23 August, coinciding with a thermometer reading of 4870, with the mercury still dropping. On the following day the temperature read 48.30. There was a WSW wind blowing at a velocity of 5 m/mon.

Twolve heimstiffic observers constitute the small at Vostok. They study elimatelegical, glacialogical and geoglepsical phenomena. The chief of the station is V. Sidogov, who is spending his second year at Vostok. ("Fighty-Eight Degrees Below Zero," unsigned acticle, France, 26 Augist 1960, p. 6)

# Server Attende Meeting of the International Stocket Semittee on Antarctic Research

M. M. Somov. Dostor of Geographical Sedences, has flown from Messerv to Compridge to purthelpate in the Fourth Conference of the Inter-

national Special Committee on Anteretic Research.

Taking part in the conference are delegations from Great Britain, Argentine, Belgium, Italy, New Zealand, Norway, the USSR, the United States, France, Chile, the Union of South Airfes, and Japan. Reports will be delivered by representatives of those countries which are carrying on research in Automotice, on the work of Antarctic expeditions during the last one and one-hulf years, and on the plans for those expeditions in 1968.

**CPYRGHT** 

The Soviet delegation is presenting for the consideration of the Special Committee certain recommendations concerning the compilation of new Antarctic maps through the joint efforts of the expeditions of all countries. ("Antarctic Research," unsigned article, Prayda, 29 August 1960, p. 4)

#### Soviet Union Ratifies Agreement on Antarctica

**CPYRGHT** 

The following extremely brief notice recently appeared in Pravda:

"By decree dated 20 October 1960, the Presidium of the Supreme
Soviet of the USSR ratified the Agreement on Antarctica, signed in Washington by a representative of the USSR on 1 December 1959. It had already been confirmed by the Council of Ministers of the USSR and approved
by the Commission on Foreign Affairs of the Soviet Union and the Council
on Nationalities of the Supreme Soviet of the USSR." ("Ratification by
the Soviet Union of the Agreement on Antarctica," unsigned article,
Pravda, 21 October 1960, p. 6)

# Soviet Law Journal Reviews Agreement on Antarctica

The Soviet legal journal Sovetskoye Gosudarstvo i Pravo has carried a 4,500 word review of the issues involved in the negotiations leading to the signing of the Agreement on Antarctica on 1 December 1959. It discusses many sections of the agreement in detail, in nearly every case emphasizing that the Soviet Union proposed and defended the salient provisions of the treaty and succeeded in eliminating those provisions which the USSR felt were inimical to the interests of the "peace-loving" peoples of the world. ("Agreement on Antarctica," by S. V. Molodtsov, Sovetskoye Gosudarstvo i Pravo, No. 5, 1960, pp. 64-72)

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